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(54) **Metal cans with membrane closures**

(57) In a can made of metal, with a membrane (5) covering the opening of the can and sealed to a circumferential flange, the flange (4) is part of a contracted region (3) on the can body (1). The contracted region (3) may be formed directly at the edge of the can body (1) at the opening end, and the flange can be in the form of an end flange (4*a*). A cap (7*a*) may be fitted over the membrane. Alternatively, the flange (4*a*) may be formed at such a distance from the edge of the can body at the opening end, that a cylindrical extension, into which a plug may be fitted, joins onto the flange.

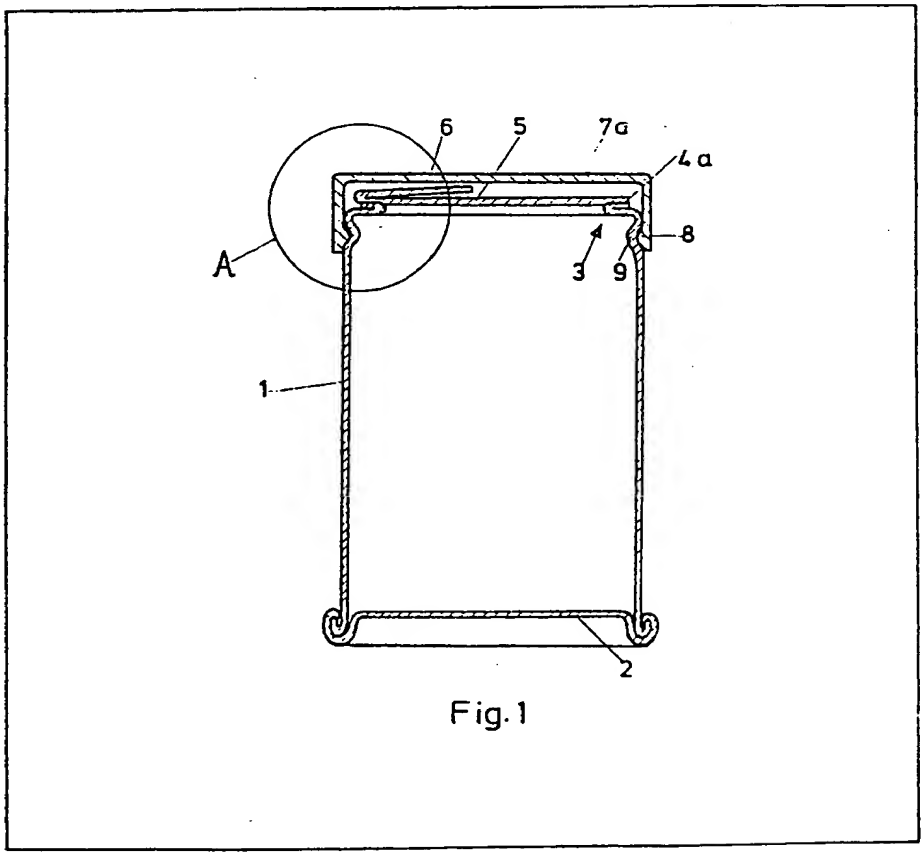

Fig.1

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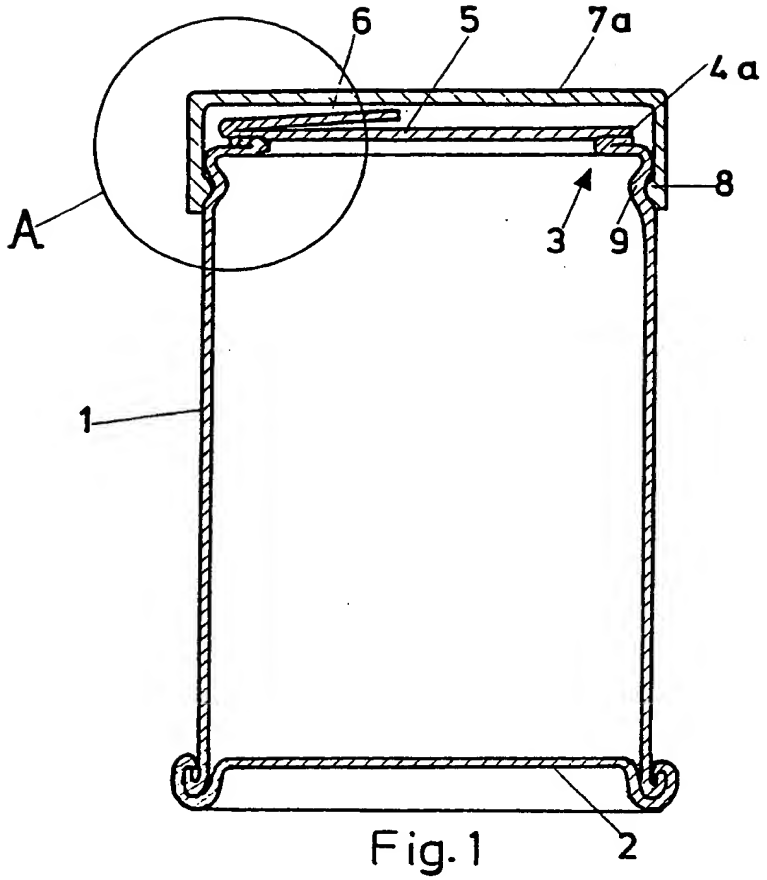

Fig. 1

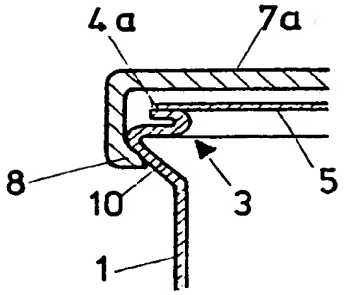

Fig. 2

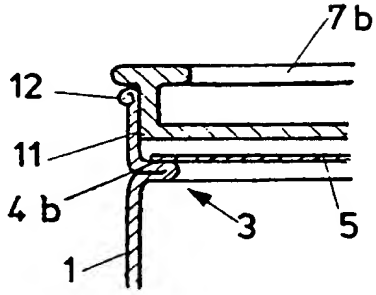

Fig. 3

SPECIFICATION

Metal cans with membrane closure

The invention relates to cans made of metal, with a membrane covering an opening of the can and sealed to a circumferential flange.

In known cans of this kind, a closure membrane is sealed to the circumferential flange of a lid-ring flanged onto the body of the can. Such cans are, however, relatively expensive as they necessitate the manufacture of an additional part, viz. the said lid-ring. Furthermore, such cans are suitable only for contents which can be poured.

Also known is a can in which a closure membrane is sealed to an outward-pointing circumferential flange which is formed on the edge of the can at the opening end. However, the disadvantage of more difficult stacking is associated with this can.

It is the object of the present invention to provide a can of the kind mentioned at the start, which can be manufactured in a manner which is simple and saves material, and which is suitable for a wide range of uses.

The solution of this object according to the invention is that the flange is part of a contracted region on the can body. The contracted region can be formed directly at the edge of the can body at the opening end, so that the resultant flange is formed as an outwardly-bent end flange. Such a can is particularly suitable for contents which can be poured, e.g. fluids and powders. In order to protect the membrane from mechanical damage, the can can be provided with a push-on lid which, for securing, interengages by means of a peripheral bead in a circumferential groove of the can body.

The contracted region, including the end flange, can, however, also be displaced radially outwards to form a projection, in such a way that the diameter of the opening formed by the contracted region is substantially the same size as the inside diameter of the can body. This design of the opening zone of the can makes it possible for such a can also to be used for contents which cannot be poured, e.g. meat pastes. When a push-on lid is used, this advantageously has a peripheral bead which interengages around the projection.

In another design of the opening zone of the can, the contracted region is formed at such a distance from the edge of the can body at the opening end, that there is a cylindrical extension joined onto the flange, the diameter of the extension being substantially the same as the diameter of the can body. Such a can is particularly suitable for contents which are pre-packed in pouches. This can can be fitted with a push-in lid which engages by friction with the extension.

All common metallic can materials, in particular tin plate and aluminium, can be used as material for the can body. In the manufacture of the cans, a cylindrical can body with welded or soldered longitudinal seam is first prepared in known manner. Next follows the forming of the contracted region in known devices. In rder that the flattest possible flange may be achieved, the can body is stressed in the axial direction ver the tools during the rolling process in the forming of the contracted region. At the same time as the contracted region is made at the opening end, at the bottom end of the body the edge can be shaped for flanging with a bottom. The body may, however, also be made of aluminium with the bottom as an integral part, by drawing and ironing or by impact extrusion.

The material used for the membrane depends on the requirements imposed on it. It can for example be made of metal foil, in particular aluminium foil, plastics foil, paper, or a laminate comprising a combination of these materials. The membrane may be provided with a tear-open tab. The membrane can be joined to the flange in a known manner using sealing devices. For this purpose sealable plastics can be applied as a coating on the membrane and/or the flange.

The push-on or push-in lid can be made of plastics, metal, or cardboard.

After forming of the contracted region, this is usually pressed flat in a further rolling or upsetting operation, so that the flange lies against the underlying part of the contracted region. It can, however, be advantageous not to press the contracted region flat. Any irregularities present can then be compensated for when sealing-on th membrane, in particular when employing an end flange. A further advantage of this design is that, in manufacture of can bodies with lacquer on the inside from sheet which is lacquered on one side, when the formation of the contracted region is carried out without substantially pressing flat, the layer of lacquer remains intact, and subsequent lacquering can be omitted.

Further advantages, features and details of the invention are revealed in the following description of preferred embodiments, with reference to the accompanying drawings, in which:

Figure 1 is a cross section through a can with covering membrane and push-on lied;

Figure 2 shows another version of region A in Figure 1; and

Figure 3 shows a further version of region A in Figure 1.

The can in Figure 1 has a cylindrical can body 1 with a flanged-on bottom 2. At the upper edge of the can body 1 is formed a contracted region 3 with an outwardly-bent end flange 4a, which lies against the underlying part of the contracted region 3. Sealed onto the end flange 4a is a membrane 5 with a tear-open tab 6. The can is provided with a push-on lid 7a which has a peripheral bead 8, which interengages in a circumferential groove 9 of the can body 1.

In the version shown in Figure 2 the contracted region 3 formed at the upper edge of the can body 1, including end flange 4a, is displaced radially outwards, in such a way that the diameter of opening formed by the contracted region 3 is the same size as the inside diameter of the can body 1. Here, the end flange 4a does not li against the

underlying part of the contracted region. The push-on lid 7 engages with its peripheral bead 8 ar und the projection 10.

Figure 3 shows another version, in which the contracted region 3 is formed at such a distance from the edge of the can body 1, that there is a cylindrical extension 11 joined onto the flange 4b, the diameter of the extension 11 being the same size as the diameter of the can body 1. The edge 12 of the extension 11 is rolled over outwards. A push-in lid 7b engages by friction with the extension 11.

CLAIMS

1. A can made of metal, with a membrane covering an opening of the can and sealed to a circumferential flange, the flange being part of a contracted region formed on the can body.

2. A can according to claim 1, in which the flange does not lie against the underlying part of the contracted region.

3. A can according to claim 1 or claim 2, in which the contracted region is formed at the edge of the can body at the opening end, and the flange is in the form of an outwardly-bent end flange.

4. A can according to claim 3, having a push-on lid which, by means of a peripheral bead, interengages in a circumferential groove of the can body.

5. A can according to claim 3, in which the contracted region, including the end flange, is displaced radially outwards to form a projection, in such a way that the diameter of the opening formed by the contracted region is substantially the same size as the inside diameter of the can body.

6. A can according to claim 5, having a push-on lid which, by means of a peripheral bead, interengages around the projection.

7. A can according to claim 1 or claim 2, in which the contracted region is formed at such a distance from the edge of the can body at the opening end, that there is a cylindrical extension joined onto the flange, the diameter of the extension being substantially the same as the diameter of the can body.

8. A can according to claim 7, having a push-in lid which engages by friction with the extension.

9. A can according to claim 1, substantially as described with reference to Figure 1, Figure 2, or Figure 3 of the accompanying drawings.

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